Elk

IN BRITISH COLUMBIA

Ecology, Conservation and Management

BRITISH COLUMBIA

Ministry of Environment, Lands and Parks

Pushed completely from British Columbia during the last glacial advance, the adaptable Elk re-populated both the wet coast and dry interior after the ice melted.

INTRODUCTION

Elk have been part of the North American environment since the ice age. These large, social, vocal animals left British Columbia completely during the last glacial advance but repopulated both the wet coast and dry interior after the ice melted. Early explorers in eastern North America named this animal Elk, even though Europeans used the same term (spelled elch) for Moose. To avoid confusion, some people have suggested giving the North American Elk the Shawnee Indian name, wapiti, but today most people continue to use the term Elk to refer to the North American forms of the Red Deer *(Cervus elaphus)*.

TAXONOMY

Order
Artiodactyla
(Even-toed ungulates)

Family
Cervidae
(Moose, Elk, Caribou, Deer)

Genus
Cervus

Species
elaphus

Subspecies
nelsoni (Rocky Mountain Elk)
roosevelti (Roosevelt Elk)

EVOLUTION AND APPEARANCE

The majestic North American Elk, or wapiti, belongs to the same species as the European Red Deer *(Cervus elaphus)* with which it can interbreed. However, the four living subspecies in North America, two of which occur in British Columbia, have been geographically isolated from the Eurasian races for at least 15,000 years and have distinctive characteristics.

An ancestor similar to the Red Deer probably arrived in North America from Europe via the Bering land bridge during the second-to-last (Illinoian) glaciation, when sea levels were lower than they are now. Fossil remains show that during the last interglacial period, Elk were widespread in North America, including Alaska. At the height of the last (Wisconsin) glacial advance, they became extinct in Alaska and were confined to areas south of the ice sheet in the United States.

As the last great glaciers receded 15,000 to 10,000 years ago, Elk spread northward into newly available habitats in southern Canada.

When Europeans first arrived, North America was home to six subspecies or races of Elk. Two of those, the Elk of eastern North America and the Merriam Elk of the southwest United States, are now extinct. The remaining four are the Manitoba Elk of the great plains *(C. e. manitobensis)*, the Rocky Mountain Elk of the Rockies and adjacent ranges *(C. e. nelsoni)*, the Roosevelt Elk of the Pacific northwest coast *(C. e. roosevelti)* and the Tule Elk of California *(C. e. nannodes)*. Following the last glaciation, Roosevelt Elk moved north into the Fraser valley and onto Vancouver Island, and the Rocky Mountain Elk spread as far as the Liard River area.

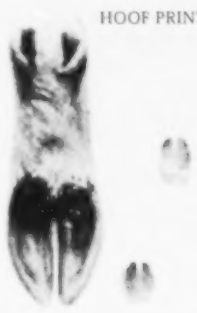
British Columbia's two subspecies of Elk, Roosevelt and Rocky Mountain, look quite similar and are best distinguished on the basis of distribution.

Bill Swan

Elk are the largest members of the deer family (Cervidae), except for the Moose. Their main characteristics are a brownish coat with a dark mane and a white rump patch, large forked antlers on the bulls, and large rounded upper canine teeth (Elk tusks) in both sexes. They are the only North American deer, other than Caribou, that commonly form large social groups.

Mature bull Elk (four years and older) have majestic, rich-brown antlers with ivory tips. The 110 to 160 cm long cylindrical beams sweep upward and back over the shoulders. In addition to the tip of the antler, there are usually five other pointed tines that arc forward and upward from the main beam. Yearling bulls usually have unbranched spike antlers, two-year-olds have a slender rack with three or four points on each side (often referred to as raghorns), and three-year-olds have a heavier set with four or five points.

Like other ungulates at the latitude of British Columbia, Elk have distinct summer and winter coats. In winter, the head, neck, and legs are dark brown, and the sides and back are a much lighter gray-brown. Bulls tend to have a lighter, creamier body colour than cows. The summer pelage is a sleek-looking, rich reddish-brown, with little or no undercoat. During the spring molt in May and June, the Elk's coat is very ragged looking. Both sexes have heavy dark manes and a yellowish-white rump patch bordered by a dark brown or black stripe.

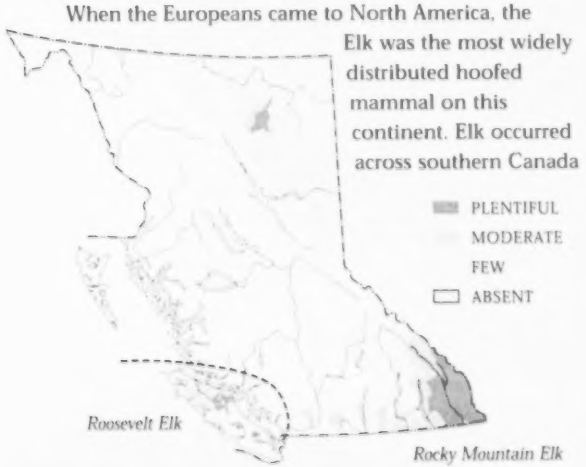

HOOF PRINTS

Adult bull Elk stand about 140 cm high at the shoulder and weigh 265 to 410 kg; cows stand about 130 cm high and weigh 190 to 270 kg.

British Columbia has two subspecies of Elk, the Roosevelt and Rocky Mountain, which look quite similar. Roosevelt Elk are slightly larger and darker than Rocky Mountain Elk, however, and the antlers of Roosevelt bulls sometimes terminate in a crown of three or four points.

DISTRIBUTION AND ABUNDANCE

When the Europeans came to North America, the Elk was the most widely distributed hoofed mammal on this continent. Elk occurred across southern Canada from Vancouver Island to Quebec and southward to northern Mexico, Louisiana, and Georgia. Because of land settlement and market hunting in the 1800s, Elk became extinct in eastern Canada, the U.S. east of the Mississippi River, the U.S. southwest, and northern Mexico. By 1900, the original North American population of several million Elk fell to under 100,000.



Except for a small herd in the Phillips Arm area, which probably migrated from Vancouver Island, and recently introduced herds near Sechelt and Powell River, the only Roosevelt Elk in British Columbia are the 3000 to 3500 members of the subspecies that live on Vancouver Island. Rocky Mountain Elk are most numerous in the east and west Kootenay regions north to about Golden and west to Grand Forks. Native populations also occur along the east slope of the Rockies and adjacent foothills from the Wapiti River drainage to the Liard River, with a major concentration in the Muskwa and Tuchodi River areas. From 1917 to the present, Elk transplants, some from outside the province, have altered the distribution picture. These supplemented some existing populations and resulted in new herds in several locations—southern Vancouver Island, the Queen Charlotte Islands, the Sechelt Peninsula, Powell River, Princeton, Lytton, Okanagan Lake, Granby River, Lower Arrow Lake, Williston Lake, and the Kechika River valley.

At the time of European settlement, the Elk was the most widely distributed hoofed mammal in North America.

When the first explorers arrived, Elk were more widespread in the interior of the province than they are today, but for unknown reasons, their numbers declined sharply in the mid-to-late 1800s. Land settlement had a relatively small impact on Elk in mountainous British Columbia, but it resulted in extirpation of Roosevelt Elk on the Gulf Islands and in the lower mainland, and the loss of habitat for Rocky Mountain Elk in the Peace River area and locally in the Okanagan Valley and Rocky Mountain Trench.

Since the mid-1970s, the number of interior Rocky Mountain Elk in British Columbia has increased from about 15,000 to 40,000. About 18,000 of these occur in northern BC, 20,000 in the Kootenay region and 1350 in the Thompson-Okanagan area. A few hundred occur in other scattered herds.

LIFE HISTORY

Elk are social animals. Up to 20 or more cows, calves, and yearlings live in groups that remain apart from the smaller groups of bulls, except during the autumn

mating (rutting) period. Both groups have dominance hierarchies that they establish and maintain by various threats and displays rather than by serious fighting. Elk use their front hooves as weapons most of the time, but bulls also use their antlers. Aggression may flare up over access to salt licks, bedding sites, wallows, or superior forage. Typically, the largest animals displace the smaller ones. Bulls of equal size also engage in sparring bouts, which are not true fights but involve a methodical engagement of the antlers followed by pushing and head-twisting, then a gradual disengagement without any indication of dominance or submission.

As the mid-September rutting period approaches, bull Elk become more active and aggressive. They seek out the cow groups and establish harems of several cows that they jealously herd and guard. To advertise their prowess to prospective mates and to intimidate rival bulls, they bugle, wallow, spray urine, thrash vegetation, and engage in other antics. Their unique bugle call starts as a low chesty roar, glides into a high bugling sound, and ends in a series of grunts. The reverberations of several bugling Elk in the autumn stillness of a mountain valley is one of nature's most exciting experiences. During the rut, adult bulls engage in serious head-to-head dominance fights that occasionally end with the victor goring the loser with his antlers. When a cow in the harem becomes receptive to mating, the bull's behaviour changes from aggressive herding to more submissive rituals that lead to breeding. Most cows are bred from mid to late September. The others have another estrus period about a month later, and possibly a third in November.

Elk have a gestation period of eight months. The timing of the rut has evolved so that calves are born in late May and early June (the most favourable time of year for them to grow and survive). At birth time, pregnant cows find a secluded spot in dense cover, sometimes even on islands in rivers. Most cows have one spotted calf that weighs about 13 kg. Twins are rare. The cow hides the calf, forages in the vicinity, and returns at intervals to nurse it. After two or three weeks, the cow and calf rejoin the matriarchal group.

David E. Fraser

Most Elk cows breed for the first time when they are just over two years old and produce a calf annually throughout life, but pregnancy rates are lower on poor ranges. Bulls are capable of reproducing as yearlings, but they usually don't get a chance to mate until they are four or five years old. Elk can live as long as 20 years, but most die by age 10 or 12.

Elk bulls drop their antlers from late February to early April, and the oldest animals shed their antlers first. New antlers begin growing in April and reach full size by late August or early September. By then, the Elk have rubbed off the velvet that nourished them.

During the rut, Elk bulls do not feed, but they exert a lot of energy so that they start the winter in poor physical condition. This results in higher death rates in bulls than in cows and an unbalanced sex ratio in favour of females. This preponderance of cows more or less dictates a polygamous mating system. Malnutrition during severe winters is probably the main reason why adult Elk die. Malnutrition also kills a lot of calves during their first winter. Wolves, Cougars, and bears are the main predators of Elk in British Columbia. They mostly take calves or adults that are weakened by severe weather, malnutrition, or injuries. Elk also die as a result of hunting, highway and railway accidents, and agricultural conflicts with farmers, in that order.

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ECOLOGICAL RELATIONSHIPS

In British Columbia, Elk usually live in mountainous areas. Elk are adaptable, however, and they occur both in the dense old-growth rainforests of Vancouver Island and grassy interior valleys with scattered tree cover, but they don't necessarily need steep landscapes and were once at home on the interior plateau and Canadian prairies. They can tolerate wet coastal and dry interior climates, but they usually keep to regions where the snow remains shallow on winter ranges. Elk are not as well adapted physically for travelling in snow as Moose, and they depend heavily on low-growing forage that disappears under deep snow. For these reasons, Elk are not as widespread as Moose, particularly in northern British Columbia.

The coastal Roosevelt Elk tend to occur in fairly small scattered herds, each one confined to a major river valley where low-elevation early seral forests as well as riparian, floodplain, wetland, and estuarine

meadow habitats provide winter-spring forage. They subsist on sedges, grasses, and ferns, supplemented by browse from willows, elderberry, blueberries, cedar, and hemlock. In summer, most Roosevelt herds migrate upward to subalpine meadows and avalanche tracks, but a few stay year-round on valley-bottom ranges.

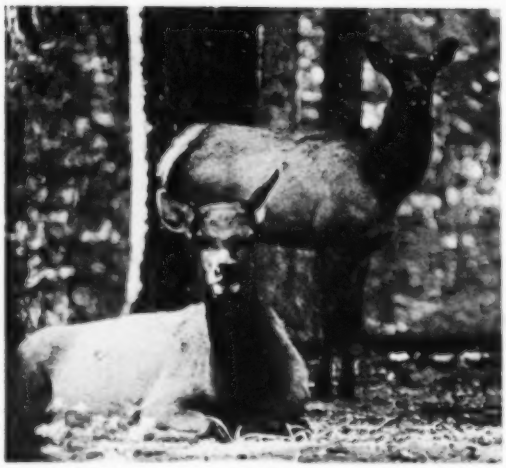
In interior British Columbia, Rocky Mountain Elk tend to be more migratory, though there is a wide variety in the distances they travel between summer and winter ranges. Their winter ranges include open forest, grassy benchlands, and floodplain marshes such as occur along the Rocky Mountain Trench south of Golden. Typical winter foods include sedges, horsetail, and willow in the wetlands and various bunchgrasses, forbs, serviceberry, rose, and other shrubs on adjacent uplands. Elk also relish cultivated forage crops such as alfalfa and clover. In May and June, most Rocky Mountain Elk migrate to subalpine and alpine basins and avalanche tracks, which support lush herbaceous vegetation. The bulls tend to migrate earliest, following the flush of nutritious new growth at higher elevations, but the cows wait until their calves are able to follow them. Autumn snowfalls push the Elk back to their traditional winter ranges, but a few bulls may stay in high-elevation areas for extended periods.

Elk share their ranges with other ungulates, particularly deer, and less commonly with Moose, Bighorn Sheep, or Mountain Caribou. But each has specialized food sources so that Elk seldom face serious competition for forage. On some southern interior Elk ranges, cattle offer significant competition.

In interior British Columbia, Rocky Mountain Elk tend to be more migratory.

Elk have evolved for thousands of years in the presence of various predators. The Elk's large size protects it from predators, along with its way of hiding newborn calves in dense cover and its habit of living in social groups. Although wolves, Cougars and bears can reduce the numbers of Elk, over the long term the rate of reproduction is usually sufficient to maintain populations. Elk are host to a number of naturally occurring parasites, bacteria, and viruses, but these usually cause disease or death only when the animals are severely stressed by malnutrition.

Elk are intelligent animals that learn from experience and adapt to changing conditions.



Bill Swan

Hunted Elk become wary, secretive, and nocturnal and learn the location of protective reserves. Herds that are not subjected to hunting or harassment, such as those in national parks, frequently graze on highway verges or golf courses and may react belligerently to people. Other Elk have invaded alfalfa fields and haystacks. Elk are among the most easily domesticated American ungulates, and in some places they are the focus of game ranching activity, but British Columbia does not permit Elk ranching.

VALUES AND USES

Long before European explorers set foot in British Columbia, the Elk was an important part of the First Nations subsistence economy. Elk products provided food, clothing, implements, weapons, decoration, and a medium of exchange. Today, First Nations people on Vancouver Island and in the Kootenay region harvest small numbers of Elk, primarily for food and ceremonial purposes.

The Elk is an important game animal in British Columbia, prized for its meat and antlers. Over several decades, harvests have ranged from 500 to 4000 animals per year. Although hunting Elk is closely regulated, it has created substantial license revenue for conservation programs, income for hunting guides and their employees, and thousands of recreation days.

Elk viewing is easiest on their winter-spring ranges. Although Roosevelt Elk prefer the obscurity of forested habitats, they are often visible in

Strathcona Provincial Park near the highway that runs through the Elk River valley. In winter and spring, it is possible to see Rocky Mountain Elk in the Columbia River marshes around Invermere, Radium, and Golden and along highways through Kootenay and Yoho national parks and Mount Robson Provincial Park. In summer, Elk are visible in spectacular timberline settings in the upper reaches of the Elk, Bull, and Kootenay rivers and in various smaller watersheds along the southern Rocky Mountain Trench.

CONSERVATION

The distribution and abundance of Elk in British Columbia have varied considerably. Severe winters, market hunting, and land settlement were responsible for population declines in the 1800s. In recent years, reservoir flooding, surface mining, and the development of agricultural land have destroyed Elk habitat, mostly in the Kootenay region. Logging appears to have both good and bad effects. Logging creates early seral forests that provide good forage, but the habitat disappears once regeneration closes the canopy. In coastal valleys, removing old-growth winter range can have serious consequences, and in the interior, cattle grazing has degraded some Elk winter ranges. Poaching and deaths on highways and railways are minor though persistent conservation concerns.

Elk conservation programs have a long history in the province. The early 1900s saw the initiation of measures such as closed or restricted hunting seasons, game reserves, and introduced Elk. The desire to protect Elk and other wildlife led to the establishment of Yoho and Kootenay national parks in 1886 and 1920 and Strathcona Provincial Park in 1911. Recent government initiatives such as the Protected Areas Strategy have produced new reserves that contain Elk, particularly in the northern Rockies. Elk transfers and reintroductions began in 1917 with the release of 10 animals near Lillooet. Since that time the release of over 600 Elk at numerous sites has resulted in several new herds and a wider distribution of Elk in the province. The Manitoba Elk was introduced twice: once in 1948 to the Lardeau River valley in the west Kootenays, and again in 1984 to the Kechika River valley in the northern Rocky Mountains. Sports groups have helped government agencies with many of the Elk transplants. There are more release sites capable of supporting Elk, but some are subject to potential conflicts between Elk and agriculture. There appear to be a number of sites on the southern mainland coast where Roosevelt Elk could establish themselves. In 1998, Roosevelt Elk was added to the Blue List of vulnerable or sensitive species because of its limited range and abundance and concerns about loss of habitat, predation, poaching, and unregulated hunting.

ELK OCCUPY A VARIETY OF HABITATS, BUT GENERALLY ARE CONFINED TO REGIONS WHERE SNOW DEPTH ON WINTER RANGE IS SHALLOW. *Ray Demarchi*

Recent conservation measures have included burning to improve range, particularly in the Williston Lake and Muskwa River areas in northern British Columbia; coordinated range management planning in the southern interior; and implementation of Forest Practices Code guidelines to protect important riparian habitats and designated winter ranges. Elk populations have responded favourably to most of those initiatives.

The future for Elk looks bright in British Columbia. Habitat protection and enhancement, especially of winter ranges, will help maintain herds in the future. This requires planning to integrate Elk requirements with logging, agricultural development, and livestock grazing. Continued control of poaching and attention to problems such as Elk dying in traffic accidents is also needed. Establishing new populations will help to secure the future for Roosevelt Elk in the province. If we give it attention it deserves, the magnificent wapiti will always be a part of British Columbia's diverse fauna.

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PROJECT COORDINATION: IAN HATTER, GAIL HARCOMBE, LIZ STANLAKE, ARLENE BETHUNE
ORIGINAL TEXT: DONALD A. BLOOD
ARTWORK: MICHAEL HAMES
DESIGN: ARIFIN GRAHAM, ALARIS DESIGN
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